

REMARKS

Reconsideration and allowance of the present application based on the following remarks are respectfully requested. Claims 1-30 are pending.

Consistent with the record, Applicants respectfully submit that the drawings filed on October 23, 2001 were accepted by the Examiner and the initial filing date has been maintained because no new matter was added.

In the Office Action, claims 1-30 were provisionally rejected under 35 U.S.C. §101 as claiming the same invention as that of claims 1-30 of Application No. 09/972,204. Applicants respectfully request that the rejection be withdrawn because Application No. 09/972,204 has been abandoned and is no longer pending.

In the Office Action, claims 1-27 and 30 were rejected under 35 U.S.C. §103(a) as being unpatentable over Miyaji et al. (U.S. Patent No. 5,559,584) in view of Iizuka et al. (JP-62254352A). Applicants respectfully traverse this rejection.

Independent claim 1 is directed to a lithographic projection apparatus that includes, for example, a particle shield that generates an electromagnetic field so as to prevent particles from becoming incident on an object to be shielded.

Independent claim 23 is directed to a method that includes, for example, generating an electromagnetic field so as to prevent particles to become incident on an object within a illumination system or a projection system.

Independent claim 25 is directed to a mask handling device that includes, for example, a particle shield that reduces contamination of a patterned surface of a mask by particles.

As conceded by the Examiner, Miyaji et al. does not disclose or suggest a particle shield that generates an electromagnetic field so as to prevent particles from becoming incident on an object to be shielded. (Office Action, p. 3.)

To make a proper combination and *prima facie* case of obviousness, the prior art must provide some motivation for the alleged modification. There is no suggestion in Miyaji et al. or Iizuka et al. to make the asserted modification to Miyaji et al., absent Applicants' own teaching.

Miyaji et al. is directed to an exposure apparatus which can remove static electricity that appears on a reticle to avoid damaging the reticle. (Miyaji et al. at col. 2, ln. 58 – col. 3 at ln. 2.) Miyaji et al. teaches that the charge on the wafer can be removed by supplying an inert gas containing ions or an ionized inert gas so that the wafer can be prevented from being

damaged by the charge. (Miyaji et al. at col. 3, lns. 58-61.) Miyaji et al. warns that if ions are produced by an ionizer, the electrodes that are used for electric discharge may emit heavy metal and that the metal could contaminate the wafer surface. (Miyaji et al. at col. 3, lns. 61-63.) Miyaji et al. merely discloses a solution to the potential heavy metal contamination problem caused by ionizing electrodes by replacing the electrodes with a two-photon absorption process using ultraviolet rays such that the *charge* on the wafer can be removed without contaminating the wafer surface with heavy metal. (Miyaji et al. at col. 3, lns. 63-67.) Nowhere does Miyaji et al. disclose or suggest that particles are present in the exposure apparatus or that *particle* contamination is a problem.

Iizuka et al. is directed to a solution of a problem that does not exist in Miyaji et al. The English Abstract of Iizuka et al. does not suggest that a particle shield is useful in anything but an ion implantation apparatus. Iizuka et al. is specifically directed to reducing the amount of foreign matter, such as dust, from attaching to a sample in which ions are to be implanted. (Iizuka et al. at English Abstract.) The dust is attracted to the sample because the dust gains electric charges from the ion beams, Iizuka et al. does not teach or suggest that any type of beam other than an ion beam would cause such a charge build-up. (Iizuka et al. at English Abstract.) That is, Iizuka et al. is specific to an ion beam tool, it addresses a problem unique to ion beam tools, and it does not provide any teaching at all regarding any other type of tool. There is simply no suggestion in the English Abstract of Iizuka et al. to make the asserted modification to Miyaji et al.

MPEP §2143 requires that the teaching or suggestion to make the claimed combination must be found in the prior art, not in Applicants' disclosure. Applicants respectfully submit that there would have been no motivation to combine Miyaji et al. with Iizuka et al. at the time of Applicants' invention because neither Miyaji et al. nor Iizuka et al. disclose or suggest that particles are present in a lithographic projection apparatus or that particle contamination in a lithographic projection apparatus is a problem. Applicants' disclosure cannot be used as a blueprint and cannot be used in hindsight to provide the motivation to combine references. Accordingly, Applicants respectfully submit that a *prima facie* case of obviousness has not been made and that independent claims 1, 23, and 25, and the claims that depend therefrom, are patentable, and respectfully request that the rejection be withdrawn.

In addition, Applicants respectfully submit that many of the dependent claims are patentable for the additional reason that Miyaji et al. and Iizuka et al. – even if it were proper

to combine the two, which Applicants do not concede - do not disclose or suggest all of the features recited in the claims.

For example, claim 9, which depends from claim 1, and claim 27, which depends from claim 25, each recite that the particle shield comprises a grid or array of electrodes. Neither Miyaji et al. nor Iizuka et al. discloses such a feature, alone or in combination. Also, claim 11, which depends from claim 1 recites that the particle shield comprises an electrostatic getterer plate and means for charging the electrostatic getterer plate to a potential so as to generate an electric field to attract particles. Neither Miyaji et al. nor Iizuka et al. discloses such a feature. Further, claim 13, which depends from claim 1, recites that the particle shield includes at least one particle trap, the particle trap comprising a recess in a surface, the recess being shaped so that it is easier for a particle to enter the recess than to exit the recess. Neither Miyaji et al. nor Iizuka et al. discloses such a feature. In addition, claim 14, which depends from claim 1, recites that the particle shield comprises a radiation source arranged to generate a beam of radiation. Neither Miyaji et al. nor Iizuka et al. discloses such a feature. Accordingly, Applicants submit that - at least - claims 9, 11, 13, 14, and 27 are patentable over Miyaji et al. in view of Iizuka et al. for these additional reasons.

In the Office Action, claims 28 and 29 were rejected under 35 U.S.C. §103(a) as being unpatentable over Miyaji et al. in view of Iizuka et al. and further in view of McCullough (U.S. Patent No. 6,445,439). Applicants respectfully traverse this rejection.

Claims 28 and 29 depend from independent claim 25. As discussed above, claim 25 is patentable over Miyaji et al. in view of Iizuka et al. McCullough is directed to a thermal management device for use in an EUV system that allegedly substantially reduces thermal distortion in a reticle, a problem that is prevalent in EUV systems. (McCullough at col. 3, lns. 19-21.) There is no motivation to use the thermal management device as disclosed by McCullough as a particle shield in a mask handling device of any lithographic system. Accordingly, Applicants respectfully submit that claims 28 and 29 are patentable and respectfully request that the rejection be withdrawn.

All rejections having been addressed, it is respectfully submitted that the present application is in a condition for allowance and a Notice to that effect is earnestly solicited. If any point remains in issue which the Examiner feels may best be resolved through a personal or telephone interview, please contact the undersigned at the telephone number listed below.

Please charge any fees associated with the submission of this paper to Deposit Account Number 033975. The Commissioner for Patents is also authorized to credit any over payments to the above-referenced Deposit Account.

Respectfully submitted,
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